

Name: _____

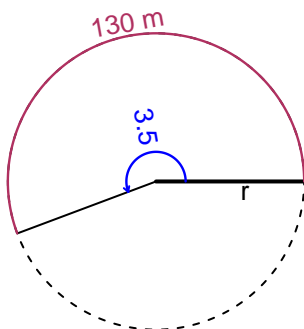
Date: _____

Trig Final (TEST v623)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

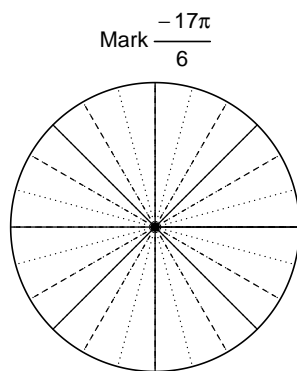
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 130 meters. The angle measure is 3.5 radians. How long is the radius in meters?

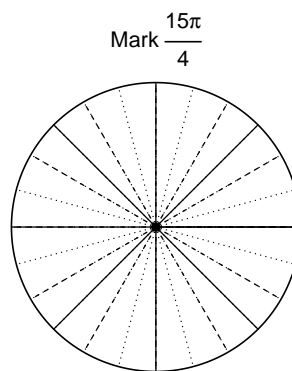


Question 2

Consider angles $-\frac{17\pi}{6}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(-\frac{17\pi}{6}\right)$ and $\cos\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(-17\pi/6)$



Find $\cos(15\pi/4)$

Question 3

If $\sin(\theta) = \frac{-45}{53}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 8.49 meters, a midline at $y = -6.04$ meters, and a frequency of 7.08 Hz. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).